

What is claimed is:

1. An electrolyte sheet, said electrolyte sheet comprising a substantially non-porous body of a varied thickness, said electrolyte sheet having a textured surface with multiple indentations therein, wherein the thickest part of said electrolyte sheet is at least 0.5 micrometers greater than the thinnest part of said electrolyte sheet.
2. The electrolyte sheet of claim 1, wherein the electrolyte sheet is a ceramic sheet formed of a polycrystalline ceramic selected from a group consisting of partially stabilized zirconia or stabilized zirconia, and being doped with a dopant selected from the group consisting of the oxides of Y, Ce, Ca, Mg, Sc, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, In, Ti, Sn, Nb, Ta, Mo, W and mixtures thereof.
3. The electrolyte sheet of claim 1, wherein the thickest part of said sheet is at least 2 micrometers greater than the thinnest part of said sheet.
4. The electrolyte sheet of claim 1, wherein the thickest part of said sheet is at least 2 to 10 micrometers greater than the thinnest part of said sheet.
5. The electrolyte sheet of claim 1, wherein said electrolyte sheet has an average thickness greater than 5 micrometers and less than 100 micrometers.
6. The electrolyte sheet of claim 1, wherein said average thickness is below 45 micrometers.
7. The electrolyte sheet of claim 1, wherein said average thickness is below 20 micrometers.

8. The electrolyte sheet of claim 1, wherein said average thickness is between 5 and 18 micrometers.
9. The electrolyte sheet of claim 1, wherein said textured surface has periodically arranged indentations.
10. A solid oxide electrode/electrolyte assembly comprising:
 - a thin electrolyte sheet of varied thickness of an average electrolyte sheet thickness between 3 micrometers and 30 micrometers;
 - at least one cathode disposed on a first surface of said electrolyte sheet;
 - at least one anode disposed opposite the cathode on a second surface of said electrolyte sheet;
 - wherein said electrolyte sheet has a thickness variation of at least 2 micrometers.
11. An electrode/electrolyte assembly according to claim 10, wherein the electrolyte sheet is a ceramic sheet formed of a polycrystalline ceramic selected from a group consisting of partially stabilized zirconia or stabilized zirconia, and being doped with a dopant selected from the group consisting of the oxides of Y, Ce, Ca, Mg, Sc, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, In, Ti, Sn, Nb, Ta, Mo, W and mixtures thereof.
12. An electrode/electrolyte assembly according to claim 11, wherein said average electrolyte sheet thickness is between 4 and 20 micrometers.

13. An electrode/electrolyte assembly according to claim 12, wherein said average electrolyte sheet thickness is between 4 and 15 micrometers.
14. An electrode/electrolyte assembly according to claim 13, wherein said average electrolyte sheet thickness is between 8 and 15 micrometers.
15. An electrode/electrolyte assembly according to claim 12, wherein said thickness variation of at least 2 micrometers.
16. An electrode/electrolyte assembly according to claim 12, wherein said electrolyte sheet is flexible.
17. A method of making an electrolyte sheet, said method comprising the steps of:
 - (a) providing a textured green pre-ceramic sheet with at least 0.5 micrometer variations in its thickness;
 - (b) sintering the textured, green pre-ceramic sheet to provide an electrolyte sheet with substantially non-porous body, the non porous body having a textured surface with multiple indentations therein, wherein the thickest part of the electrolyte sheet is at least 0.5 micrometers greater than the thinnest part of the electrolyte sheet.
18. The method according to claim 17, wherein the green sheet and the resulting electrolyte sheet have thickness variation of at least 2 micrometers.
19. The method of claim 17, wherein said step of providing said textured green pre-ceramic sheet includes placing ceramic slip on a textured surface.

20. The method of claim 17, wherein said step of providing said textured green pre-ceramic sheet includes texturing said green pre-ceramic sheet with at least one textured roller.
21. The method of claim 17 wherein said green pre-ceramic sheet is squeezed between two rollers.
22. The method of claim 17 further including a step of removing green-pre-ceramic material from higher areas of the green pre-ceramic sheet.